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| 10/630,222   | 07/30/2003  | Fumio Takagi         | 9319K-000537        | 8302             |
| 27572  | 7590        | 05/31/2005           | EXAMINER            |                  |
| HARNESS, DICKEY & PIERCE, P.L.C.<br>P.O. BOX 828<br>BLOOMFIELD HILLS, MI 48303 |             |                      | HSIEH, SHIH WEN     |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2861                |                  |
| DATE MAILED: 05/31/2005  |             |                      |                     |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/630,222

Applicant(s)

TAKAGI ET AL.

Examiner

Shih-wen Hsieh

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2005.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-13 and 15-17 is/are rejected.  
7) ☒ Claim(s) 14 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 7-30-03; 3-3-05 (fig. 6) is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

***Response to Amendment***

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 4-6 and 9-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Becker et al. (US Pat. No. 5,984,450).

In regard to:

Claim 1:

Becker et al. teach:

A method of filling an inkjet head of an inkjet printing apparatus with a liquid stored in a tank, the method comprising the steps of:

bringing a suction cap (62, 64, 66 or 68, fig. 6) into close contact with a nozzle opening surface of the inkjet head (22, 24, 26 or 28, figs. 1-3) while a gas-permeable filter (82, 84, 86 or 88, fig. 6) is positioned between the suction cap and the nozzle opening surface, the gas-permeable filter allowing a gas to pass therethrough and preventing the liquid from passing therethrough, refer to col. 4, lines 28-35 and 44-55; and

sucking air within the suction cap with a pump connected to the suction cap so as to draw the liquid from the tank to the gas-permeable filter and fill the nozzle to a tip thereof with the liquid, refer to col. 4, lines 44-55.

Claim 4:

Becker et al. further teach:

wherein the step of filling the nozzle with the liquid is preceded by a step of moving the inkjet head to a non-ejection region outside a printing region of the inkjet printing apparatus, refer to col. 4, lines 28-35.

Claim 5:

Becker et al. further teach:

wherein the ink jet head further comprises a plurality of the nozzles (refer to fig. 15); and

in the step of bringing a suction cap into close contact with the nozzle opening surface of the ink-jet head, the gas-permeable filter is brought into close contact with all nozzle opening surfaces of the nozzles of the inkjet head so as to cover all of the nozzle opening surfaces, refer to col. 4, lines 28-35.

Claim 6:

An inkjet printing apparatus comprising:

an ink-jet head;

a tank supplying a liquid to be ejected to the inkjet head;

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a suction unit that is selectively pressable into close contact against a nozzle opening surface of the ink-jet head, the suction unit including:

a suction cap;

a gas-permeable filter provided at an ink jet head pressing surface of the suction cap; and

a pump connected to the suction cap;

wherein the gas permeable filter allows a gas to pass-therethrough and prevents the liquid from passing therethrough.

Rejection:

This claim is rejected on the basis as set forth for claim 1 discussed above. The plunger (80, fig. 3) of Becker et al. is a type of pump.

Claim 9:

The inkjet printing apparatus claimed in Claim 6, wherein at least one of:

an assembly provided with the suction unit; and ,

the suction cap;

is capable of being raised or lowered in a non-ejection region outside a printing region.

Rejection:

This claim is rejected on the basis as set forth for claim 4 discussed above. As to raised or lowered in a non-ejection region outside a printing region, since this is the common practice for the engagement of the capping device against a nozzle plate of an ink jet head, therefore, this feature is inherent for a capping device.

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Claim 10:

The inkjet printing apparatus claimed in Claim 6 wherein the gas-permeable filter is adapted to be brought into close contact with all nozzle opening surfaces of all nozzles of the inkjet head so as to cover all of the nozzle opening surface.

Rejection:

This claim is rejected on the basis as set forth for claim 5 discussed above.

Claim 11:

A method of filling an ejection head constituting an apparatus for manufacturing a micro-array by an inkjet method, wherein the ejection head is filled with a liquid stored in a tank by using the method of filling an inkjet head with a liquid claimed in Claim 1.

Rejection:

This claim is rejected on the basis as set forth for claim 1 discussed above. The micro array can be visualized in fig .15 of Becker et al.'s invention.

Claim 12:

An apparatus for manufacturing a micro-array by an inkjet method, which is the inkjet printing apparatus claimed in Claim 6.

Rejection:

This claim is rejected on the basis as set forth for claim 6 discussed above. The micro array can be visualized in fig .15 of Becker et al.'s invention.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 2, 3, 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Becker et al.

In regard to:

Claims 2 and 7:

The device of Becker et al. DIFFERS from claims 2 and 7 in that it does not teach:

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wherein the gas-permeable filter allows the gas to pass therethrough and prevents the liquid from passing therethrough while a pressure on the gas-permeable filter from the pump is below a certain level.

In order to suck something out of another thing, a pressure difference has to be existed between these two things.

Therefore it would have been an obvious matter that to suck air out of the capping device while preventing the liquid to pass therethrough, the sucking device used for this purpose has to exert a certain level of pressure against the capping device so as to suck the air out.

Claims 3 and 8:

The device of Becker et al. DIFFERS from claims 3 and 8 in that it does not teach:

wherein the gas-permeable filter further comprises fine polytetrafluoroethylene fibers having a mean pore diameter of 1 to 3 micron.

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to select a known material such as the fine polytetrafluoroethylene fibers proposed in the instant application, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use. Also it would have been obvious to a person having ordinary skill in the art at the time the invention was made to select the pore size and range of the fine fibers, since it has been held that where a general conditions of a



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claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art, refer to MPEP 2144.07 and 2144.05 II A.

5. Claims 13 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schleifer et al. (US Pat. No. 6,372,483 B2) in view of Becker et al.

In regard to:

Claim 13:

Schleifer et al. teach:

An apparatus for manufacturing a micro-array, comprising:

a carriage (208, fig. 6, Schleifer et al. called it a head retainer, the carriage called in the instant application is also a type of retainer, which retains the cartridges, and the head is generally a portion of it) that is movable in at least one direction (202, 204 or 206, fig. 6) on a stand, refer to col. 9, lines 41-62 (for the stand, 120 of fig. 5 can be seen as the stand, although fig. 5 and fig. 6 are two different embodiments, the enclosure 120 can be used in both, with the only exception that 120 is not shown in fig. 6);

a plurality of cartridges (222, figs. 11 and 12) detachably mounted on the carriage, each cartridge storing a liquid (see fig. 12 for liquid) and, including an ejection head (210, figs. 610 and 12) provided at a tip thereof for ejecting the liquid by an inkjet method, refer to col. 7, lines 17-24 and 39-42 and col. 10, lines 43-60 (for detachably mounted, most of the cartridges are installed into the carriage/carrier/retainer in this manner);

a table (20, fig. 6) supporting a micro-array substrate (10, fig. 6) relative to the carriage (208, fig. 6) to enable manufacturing of a micro-array by ejecting drops of the liquid, refer to col. 2, lines 50-54; col. 6, line 66 to col. 7, line 2 and col. 9, lines 40-55; and

a suction unit (40, fig. 6) mounted on the stand so as to be raised or lowered while the carriage is in a housing position;

wherein the suction unit includes:

a suction cap connected to a pump (74, fig. 6) (although a suction cap is not mentioned in Schleifer et al.'s invention, inherently, when a purging process is taken, a capping device is generally associated with this process so as to hold the liquid sucked out of the nozzles of the head during the purging process).

The device of Schleifer et al. DIFFERS from claim 13 in that it does not teach:

a gas-permeable filter supported by the suction cap, the gas-permeable filter being contactable with a face of the carriage, said gas permeable filter allowing a gas to pass therethrough and preventing the liquid from passing therethrough.

This portion is discussed above for claim 1, and will not repeat here.

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the device of Schleifer et al. to include a gas-permeable filter as taught by Becker et al. for the purpose of filling the liquid up to the firing chamber of the head nozzles during a priming/purging process.

Claim 15:

Schleifer et al. further teach:

wherein the suction unit is of unitary construction, refer to col. 9, lines 22-26.

Claim 16:

Schleifer et al. further teach:

wherein the ejection head further comprises a multi-reservoir head (six reservoirs, 222) including a plurality of ejecting portions and a plurality of reservoir tanks, refer to figs. 10-12.

Claim 17:

Schleifer et al. further teach:

wherein the table is movable in a direction perpendicular to the moving direction of the carriage, refer to fig. 6, see the directions of 63 and 204.

### ***Allowable Subject Matter***

6. Claim 14 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for the allowance of claim 14 is the inclusion of the limitation of wherein an elastic sheet having a plurality of suction holes formed therein is interposed between the gas-permeable filter and the suction cap. It is this limitation

found in this claim, as it is claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

### ***Response to Arguments***

9. Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection.


New references US 5,984,450 and 6,372,483 have been used in this office action. Since Applicants amended the claims, and Examiner changed the references, therefore this office action is made of final.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shih-wen Hsieh whose telephone number is 571-272-2256. The examiner can normally be reached on 7:30AM -5:00PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Talbott can be reached on 571-272-1934. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**SHIH-WEN HSIEH**  
**PRIMARY EXAMINER**

  
Shih-wen Hsieh  
Primary Examiner  
Art Unit 2861

SWH

  
May 26, 2005